DOCUMENT RESUME

ED 383 593 SO 024 806

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TITLE Critical Thinking: Attitudes, Skills, and Ambiguity.
PUB DATE [85]
NOTE 19p.
PUB TYPE Viewpoints (Opinion/Position Papers, Essays, etc.) (120)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Cognitive Processes; *Critical Thinking; *Decision Making; Elementary Secondary Education; Inferences; Logic; *Logical Thinking; Philosophy; *Problem Solving; *Thinking Skills

ABSTRACT

This paper provides an overview of the realm of critical thinking. The document explores the development of a critical thinking attitude and specific skills relative to logic, rationality, and reasoning that must be fostered to facilitate and enhance future learning. The issue of ambiguity also is addressed as a central construct of the critical thinking domain. The paper addresses the history of the development of critical thinking and how philosophers have addressed it through time. Relatively little is being done to address the areas of critical thinking and logic in the schools. A review of the literature related to critical thinking suggests ways in which schools can work to develop critical thinking in students. Questions are raised for areas of further research in this area. (EH)

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ED 383 593

Critical Thinking: Attitudes, Skills, and Ambiguity

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Running head: CRITICAL THINKING

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ABSTRACT

The realm of critical thinking has recently begun to evoke concern among educators and researchers. This domain however, has been viewed from many differing perspectives and theoretical stances. The purpose of the present paper is to clarify the sub-components of "critical thinking" and offer suggestions as to enhancement of this elusive construct.

Critical thinking is the latest watchword in education. Every few years, another trendy concern is manifested, then seems to die away in a year or so. However, the realm of critical thinking is really the epitome of education, and as such, will never really pass away, but its absence of course will be reflected throughout all domains of education.

There are two main realms of critical thinking which will be explored. First, the development of a critical thinking attitude must be explored, established, and finally maintained. Secondly, specific skills relative to logic, rationality and reasoning must be fostered so as to facilitate and enhance future learning. Finally, the idea of ambiguity will be addressed as a central construct in this domain.

To begin, we must acknowledge that critical thinking has been with us for centuries and does exist. We owe much to thinkers of the past. Socrates, of course, with his "Socratic method" of questioning was one of the first critical thinkers, and of course died for this excess. Voltaire, John Henry Newman, John Stuart Mill, and William Graham Sumner, all made specific contributions to his scholarly endeavor. Many books have been written which contribute to this area. St. Agustine and St. Thomas Aquinas with their books, De Libero Arbitrio and Summa Theologico, respectively have contributed immensely to this field. Rene Decartes, with his Meditations and of course Immanuel Kant's

tomes, Critique of Poor Reasoning and Critique of Practical Reasoning has left indelible and veridical imprints upon our thinking.

Recently of course, forms of types of thinking and perspectives on cognition have developed. The "mechanistic paradigm" attributed to John Locke, Berkeley, Hume, Wundt, Titchener, and more recently Watson, Hull and B.F. Skinner, have made contributions in the philosophical as well as the psychological field. The organismic paradigm, with its continental European foundations have left us with the nativist or constructivist perspective of Kant, Werner, Piaget, and Chomsky. Finally, the dialectical paradigm with both continental and Soviet foundations includes the thesis-antithesis-synthesis perspective of Hegel, the dialectical materialist view of Marx and the recent contributions of Vygotsky and Reigel.

Although contributors to this realm are many, there is little being done in the schools relative to this impressive body of knowledge that has been left to us.

The College Board, in a recent publication "Academic Preparation for College" specifies "reasoning" (its euphemism for critical thinking) as an essential skill for college. The cited reasoning skills are:

1) The ability to identify and formulate problems, as well as the ability to propose and evaluate ways to solve them.

2) The ability to recognize and use inductive and deductive reasoning, and to recognize fallacies in reasoning.

3) The ability to draw reasonable conclusions from information found in various sources whether written, spoken, or displayed in tables and graphs and to defend one's conclusions rationally.

4) The ability to comprehend, develop, and use concepts and generalizations.

5) The ability to distinguish between fact and opinion. (1984, Benderson, p. 16)

Certainly, the College Board is endeavoring to inculcate the wisdom of the ages into the minds of our future thinkers with the aforementioned skills. However, foundations must be established upon which to build the intellectual edifice of the future. Basic "critical thinking skills" are not clearly specified. A number of theorists have offered differing skills, but there is little agreement within the field. Benjamin Bloom, with his taxonomy of educational objectives has indicated that cognition is arranged in a hierarchical fashion through six categories:

1) Knowledge

2) Comprehension

3) Application

4) Analysis

5) Synthesis

6) Evaluation

Generally, most authorities indicate that students can memorize rote materials, but they lack the ability to interpret, make inferences, judge, predict, and persuade. The incorporation of the above mentioned skills into the curriculum may be difficult, depending upon one's perspective. But then, what is education if not the development of one's ability to think?

Lyle K. Eddy, a one time student of John Dewey has written on this topic. He cites some of the errors in reflection which are often designated in our culture by Latin terms. Here are some examples from his paper on "Education as Development of Ability to Think."

1) Post hoc ergo propter hoc- or, confusion of chronological succession with the establishment of logical sequences. Since recent wars have happened after armament increases war happens on account of such increases.

2) Petitio principi, or question begging, e.g. Have you stopped beating your wife?

3) Ad hominem--or the use of an irrelevant personal attack to discredit a man's argument.

4) Non sequitur--either concluding from ideas and data which do not warrant a conclusion or substituting a meaning not the equivalent of another.

5) Bifurcation, or spurious dilemma--the division of an issue into just two sides without recognizing further possible alternatives.

6) Testimonials--for example, the assumption that since a certain headache remedy cured Mr. X's headache, it will cure Mr. Y's leaves unchecked the possibilities that the headache may be attributable to different conditions.

Testimonials typically invite acceptance of a claim on grounds of prestige of a spokesman without appraisal of the claim, often without consideration even of the relevance of the prestige to the claim.

Certainly, some of the above issues may be attributed to failure of the schools to teach logic. On the other hand logically, some of our schools may have also failed to teach or to teach to think. There are some critical issues which should be faced relative to critical thinking, and these also constitute needed areas of instruction. These include:

1) Generalization--students have a tendency to over-generalize from a specific instance to all occurrences.

2) Inferencing--students have difficulty formulating and drawing inferences from data or textual materials.

3) Ignoring of Evidence--students have a tendency to ignore the data or factual materials in favor of long held biases and beliefs.

4) Opinions do not make right. All too often, a student may hold an opinion (as is his Constitutional right) yet believe that his opinion makes an idea or a conclusion correct.

5) In science, students have difficulty differentiating between proving a hypothesis true and also proving it false. They rarely resort to falsification strategies and continue in one mold, or manner of thinking. Thus, they have a "mental set" which they apply to all problems irregardless of type of problem.

Thus, as can be seen the work of the teacher is truly Herculean, particularly in today's age of accountability and an emphasis on "back to the basics."

Towards A Critical Attitude

If school cannot teach critical thinking, then perhaps they can at least foster a critical thinking attitude. Siegel (1980) has written on the need for certain "attitudes, dispositions, habits, and character traits" which together may be labeled the critical spirit or critical attitude (p.9).

Teachers must teach in a "critical manner" that reinforces a "critical spirit" i.e. the encouragement of skills, habits, and dispositions necessary for the development of this critical spirit.

Isreal Scheffler (1965, p. 107) indicates it is an attempt to initiate students.

"into the rational life, a life in which the critical quest for reasons is a dominant and integrating motive."

Karl Popper (1965) takes critical thinking to be not only a fundamental educational ideal, but the very hallmark of serious intellectual activity. (In Siegel, 1980)

Some of the aspects of a critical attitude are as follows:

1) The impartial evaluation of claims. The student will examine data, information, and textual material in an objective fashion, examining both the positive and negative aspects as well as short term and long term repercussions.

2) The use of logical criterial. The student will endeavor to use logical, systematic thinking to arrive at a proper inference. The student will attempt to use certain processes to arrive at an inference.

3) The willingness to conform judgment to principle. If a student is going to make a judgement, that appraisal should be based on certain logical, rational principles.

4) Understanding as well as knowing. In order to have a critical attitude, the student must not only "know," but must attempt to comprehend and understand. This is the basis of Piaget's "genetic epistemology." As with Einstein's theory of relativity, we may "know" what it is and recognize it, but how many of us truly "understand" the basic premises?

5) Grasping connections between premise and conclusions. A critical attitude endeavors to assist the student in examining all conections between various variables, occurrences, and happenings. On a higher level, the student must examine the connection between premise and a logical conclusion.

6) Questioning and demanding reasons. Perhaps the most important part of a critical attitude, the process of questioning, probing, inquiring, ascertaining information, and finally demanding reasons and explanations hallmarks the critical attitude. Blind acceptance of doctrine is unacceptable. Chauvanism is intolerable.

7) Understanding of rules of assessment and criteria of evaluation. In order to have an attitude, one must also have some minimal comprehension and understanding of the rules of assessment and the criteria for judgement and evaluation.

8) Understanding and application of Criteria. Once taught a specific body of knowledge the student should be able to first understand it, then apply it to specific instances, then later be able to generalize that knowledge where applicable.

9) Explaining and defending opinions and judgment verbally and in writing. A critical attitude entails the ability to

explain one's opinions, then defend them in a logical rational systematic fashion. The critical attitude is also enhanced when one can defend both with the written word and in an impromptu verbal manner.

10) Marshalling arguments in support of a thesis. The critical attitude is one which depends upon the procurement of additional information for the defense of one's thoughts and beliefs. The critical thinker is "on the look out" for additional data and perhaps even an opposition point of view for re-examination of one's posture.

11) Willingness to Re-evaluate. A critical attitude contains the openness and the willing attitude to reevaluate one's ideas, opinions, and theories. This should be applicable to other, perhaps later discovered knowledge and information.

12) Publicity does not reiterate credibility. The critical attitude is not influenced unduly by the media or television.

Finally, and most importantly, the student should not accept knowledge blindly from a teacher, professor, or other authority figure. This requires ego strength on the part of all teachers, both now and in the future.

Towards Critical Viewing Skills:

Neil Postman of New York University has suggested that in today's world of mass media and television, it is critically

important to also teach critical viewing skills. As so much information about the world stems from the television, we must teach children how to view this media quite critically. Critical viewing skills should emphasize the following:

1) The importance of using the television to learn something and not to be just mindlessly entertained.

2) Being able to differentiate between "neurotic reality" as manifested on television and real life reality. In other words, problems in real life are not solved as they are solved in the thirty minute situation comedy. Often, children mimic television characters and use them as role models. However, there are more positive role models than Hulk Hogan and "Mr. T." in the world. The work of Albert Bandura has shown the impact of television on children.

3) The need to critically examine news as presented in capsulated form. That is, there is more to the Afganistan crisis than is reported on the ten o'clock news in ten minutes. This was brought home to the writer who was visiting the Soviet Union when the Soviets invaded Afgahinstan. Their perspective, and the perspective of Eastern and Western Europe differed from the perspective of the United States. Children can understand that the news is a <u>summary</u> of events and not the entire story.

4) The connection of past knowledge to new knowledge should be emphasized in an educational environment. The presidency of Franklin D. Roosevelt as acted on a television special should be connected to current learnings about the Great Depression and World War II.

5) The television should contribute to the development of world knowledge. Recent television specials on Africa should contribute to a development of knowledge about the world, and the problems of the world.

6) Students must learn to be judicious regarding the use of their time. John Dewey has indicated that we "learn by doing," not by watching. A triarchic view of learning must be developed. We learn by doing, we learn by reading, and we can also learn by watching. However, we must indicate that the time spent watching mindless neurotic soap operas and situation comedies and cartoons can never be replaced.

7) At a later stage (possibly high school) students can be taught that television is a socializing agent, an indoctrinating agent and a mechanism whereby conspicuous consumption is fostered (Veblen, 1899). This is an integral part of most introductory sociology courses in college, and quite conceptual in nature, but an area where at least some direction should be taken. This could of course be seen as a "time management" type of skill to remove the ideological

implications, i.e. that students must budget their time wisely so as to be able to engage in sports, academic activities etc.

Ambiguity as a Means to Critical Thinking

Ambiguity is a central part of both critical thinking and the development of a critical attitude. In fact, Jean Piaget the famous child development specialist has written extensively about the need to create a state of "disequilibration" in the child so as to enhance learning. Teachers must also create a state of ambiguity so as to provide the proper climate and atmosphere in the classroom so as to enhance thinking. Some points need to be made relative to this domain.

1) Teachers should not provide the correct answer and should endeavor to foster "higher order" questions. Multiple choice and true/false tests have a place, but they should not be over utilized. They should be used in conjunction with compare/contrast and position type of essay tests. Administrators need to be aware of the fact that essay tests cannot be as readily and as easily scored, and thus teachers will need additional preparatory time for the correcting of critical thinking types of tests and essays.

2) Questioning is a key tool in the teacher's armamentarium in terms of mechanisms to enhance creative thinking. Succinct,

specific, thought provoking questioning is essential for the development of critical reasoning and thinking skills.

3) The proposing of different points of view will enhance critical thinking. Students can report on various points of view or even "play the devil's advocate" in terms of lessons e.g. advocating for the South during the Civil War, taking England's point of view during the Revolution.

4) Indicating that other additional information, facts, or data may later come to light and thus judgments must always be seen as transitory or "temporarily suspended."

5) Teachers must indicate that different countries and different cultures value different aspects of reality.

6) Facts can be a source of ambiguity if they are misconstrued, misunderstood or misinterpreted or misapplied. At the college level, a primer text by Huff, How to Lie with Statistics, proves that numbers can be used for political purposes and manipulated to show different points of view.

7) Finally, in light with the critical attitude, teachers must indicate that there is, in fact, no final answer, this is especially true in light of new knowledge, new data and new scientific discoveries. In the Middle Ages, those with epilepsy were seen to be possessed by the devil. Now, with computerized axial tomography (CAT SCAN), positron emission tomography and nuclear magnetic resonance, we know that

epilepsy is caused by excessive electrical activity in the brain, and can be treated with dilantin and other drugs.

On the Need for Future Research

As in other educational realms, there still appears to be much to do in terms of research. Presently, critical thinking and research into it appears to be a haphazard process. Several germaine issues appear to be most salient.

1) Generalization of learning appears to be the most necessary domain for research. How is it that some students are able to generalize from what they have learned to other domains, while others fail to make the necessary application and inferential leaps?

2) Inferencing, some students appear to have this ability; others don't. Still others may lack the higher order skills to make an inference. How do we teach inferencing skills?

3) The effectiveness of newer materials published by companies who have "jumped on the bandwagon." Many companies have published materials such as figural analogies, verbal analogies, figural classifications, transivity, antonyms, synonyms, figural sequences, figural similarities, syllogisms, inductive, and deductive thinking, spatial perception, and the like. The effectiveness of these package programs has yet to be examined. Do these "programs" really constitute an attempt to teach critical

thinking or are they just mind games by companies who have attempted to milk the market?

4) Practical applications, can students use critical thinking in their own lives? Will they still smoke and drink after examining the evidence? Will they still use drugs and engage in sex?

All in all, educators can do their colleagues and other teachers a great service by teaching children to think and to adopt a critical attitude toward their academic endeavors. Although their may be difficulties in the short run, the benefits in the long run will be well worth the effort. It is hope that this paper is a "small step for mankind" in that direction.

References

Benderson, A. (1984). Critical Thinking Princeton, New Jersey: Educational Testing Service.

Eddy, L. (1964). Education as Development of Ability to Think. Unpublished paper. University of Nebraska, Lincoln, Nebraska.

Huff, D. (1954). How to Lie with Statistics. New York: Norton.

Popper, K. R. (1965). Back to the PreSocratics in Conjectures and Refutations: The Growth of Scientific Knowledge. New York: Harper and Row.

Scheffler, I. (1973). Reason and Teaching. New York: Bobbs-Merrill.

Siegel, H. (1980). Critical Thinking as an Educational Ideal. The Educational Forum.

Veblen, T. (1899). The theory of the leisure class. New York: MacMillan.